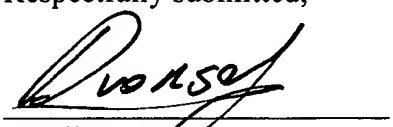
Therefore, Applicant respectfully requests the Examiner to reconsider the Declaration under 37 C.F.R. § 1.131 filed on June 28, 2005.

Entry and consideration are respectfully requested. If any points remain in issue, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



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Nataliya Dvorson
Registration No. 56,616

Date: August 22, 2005

Attorney Docket No.: Q57709

EXHIBIT A

DOCKET N°:102078

ALCATEL

Alcatel CIT
Branche CRC

DIFFUSION LIMITEE

FICHE D'INFORMATION

Asynchronous WDM regenerated transmission

Partie à remplir par l' Unité

Réf. Alcatel CIT-CRC URP/C/98/0260	Version n° :1	Auteur (en contact avec le Dép. IP) : P. Brindel
Docket n° : 102078	Date : 17-12-98	Visa de l'auteur :

APPROBATION

Le Chef d'Unité	Date : 4/1/99	Visa :

Nombre de pages de la fiche d'information technique (FIT) :

Nombre de pages d'annexes (FIT) : 4

Partie à remplir par la DAG

APPROBATION

Directeur - Administration et Gestion	Date :	Visa :

Version revue par le Département IP : éditée le : nombre de pages :4

DMT/FM/94/005 V4

ALCATEL

Alcatel CIT
Branche CRC

DIFFUSION LIMITEE

DOCKET N°:102078

COMPLEMENT D'INFORMATION

(partie à remplir impérativement par le Chef d'Unité)

1. Références de l'étude

- N° Etude .....
- N° Case CRC : OSN 02.....
- Nom du projet CRC : optical systems and networks.....

2. Financements de l'étude

- Financement interne au groupe — Acquis
  - Alcatel : OUI*
  - Autres filiales : NON* OUI* : lesquelles ? .....
- Financement extérieur au groupe — Acquis ?* / Espéré ?*
  - CE NON* OUI* : programme ? .....
  - Autres NON* OUI* : lesquels ? .....
  .....
  .....

3. Business Division(s) susceptible(s) d'être intéressée(s) : SND (Vincent Lemaire).....

.....

4. Délai pour le dépôt :

- Urgence ? (remise de proposition, concurrence, ...)
  NON* OUI* Nom de l'organisme , société, ...
  Délai :.....
- Si dépôt rapide (non urgent) souhaité, motif et délai ? (divulgation, ...):.....
  .....

Fiche à retourner à DAG / PI - B2 285

* encadrer la réponse correcte

Partie réservée à la Direction Administration et Gestion

- Nom du titulaire :
- Contrainte de classification militaire :
- Licence obligatoire :
- Autorisation du client :

Asynchronous WDM regenerated transmission	Réf. Alcatel CIT - CRC URP/C/98/0260

ALCATEL

Alcatel CIT
Branche CRC

CONFIDENTIAL

DOCKET N° : 102078

FIT (Fiche d'information technique)

Title :Asynchronous WDM regenerated transmission.....

.....

Author(s) from Alcatel CIT - CRC

Last name	First name	Tél :	Unit	Situation (employee,trainee counsel engineer, ..)
Brindel	Patrick	1855	URP	Engineer
Dany	Bruno	4120	URP	Engineer

Author(s) outside from Alcatel CIT - CRC

Last name	First name	Tél :	Company or body

CRC Project reference : optical sytems and networks .....

1. What is the technical problem which the author of this FIT had to solve?

Long-haul WDM transmission at very high bit-rate (40Gbit /s or more) requires regeneration techniques. Three functions must be achieved : re-amplification, re-shaping and re-timing, this functions should be applied periodically (3R regeneration). Considering the limited available power at each side of an ocean, we have also to reduce the power consumption of each regenerator. Taken into account the appreciable property of wavelength transparency of the actual optical transmission link, it will be necessary to keep these for the future transmission link.

2. Which is to the knowledge of the author the best already existing (prior art) solution to this problem?

Regenerated WDM systems, based on the periodically synchronous phase/intensity modulation of an RZ-coded pulses stream, need either (a) a self re-synchronisation using the fibre chromatic dispersion properties or adjustable delay lines which makes possible to use a single synchronous modulator for all channels, or (b) as many regenerators operating in parallel as there are .

3. Why is this best prior art solution not good enough?

The solution based on parallel regeneration is technically feasible (needs of accurate dispersion management) however not yet available. The number of channels needs increased power consumption for the whole regeneration stage.

4. Basic idea of the author's solution.

Assuming a regeneration span Z_r larger than the amplifier span Z_a such as $Z_r = n.Z_a$, we propose to place at every amplifier, a regenerator specifically devoted to a single or a few wavelength. Thus, at each amplification stage only one channels (or a subset is regenerated and re-inserted into the system.

5. Short description of the solution (add extra sheet and drawing(s) where necessary).

As shown on fig. 1, we can describe a transmission link for 4 channels at 40 Gbit/s with successive regeneration of each channel. Such a configuration does'nt need re-synchronisation stage.

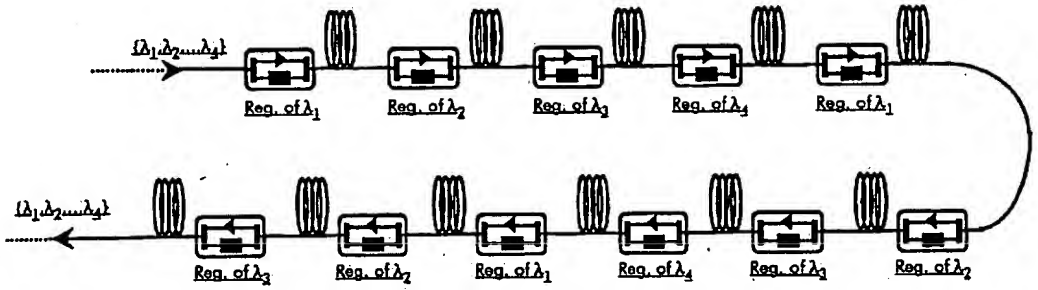


Figure 1 : typical transmission using our principle of asynchronous regenerated WDM repeater

Figure 2 below shows our new repeater version corresponding to the generalisation with a subset $\{....,\lambda_i,...\}$ of dropped channels. The choice of the subset of $\{....,\lambda_i,...\}$ wavelength could be dependant of parameters given by Dispersion-Management (DM) techniques and/or by the facility to synchronise this set.

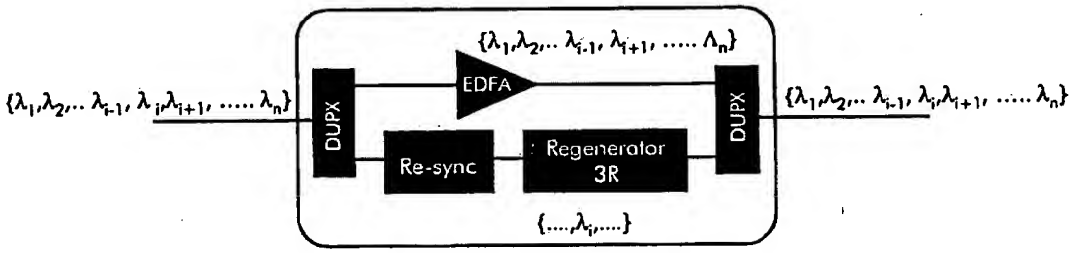
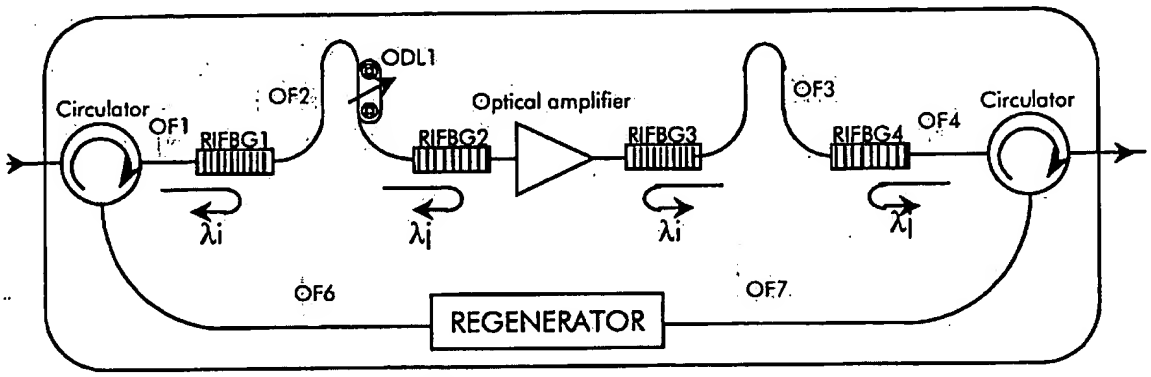


Figure 2 : principle design of partially asynchronous regenerated WDM repeater –
DUPX = *Duplexer*
EDFA = *Erbium Doped Fibre Amplifier*
Re-Sync = *Re-Synchronisation block*

An example of selective channel dropping apparatus is schown in fig. 3. It is based on reflecting fibre gratings, and also includes re-synchronising delay line



RIFBG = *Reflective In-Fibre Bragg Grating*
ODL = *Optical delay line*
OF = *optional Optical Fibre used to manage the chromatic dispersion/slope transmission link*

Figure 3 : realistic design of our WDM repeater when two channels are simultaneously regenerated

6. Advantage(s) of the new solution (wherever possible with quantification) as compared with the best prior art solution(s) referred to under 2. above.

- In case of regenerating failure, the other channels are not affected
- A mechanical switch by-passing the failed regeneration is possible.
- There is less optical power in the modulator as compared to the self-synchronise solution (where all channels are modulated at once) which alleviates optical power handling constraints for the modulator.
- There is no needs to synchronise the whole WDM channels throughout the system.
- When the number of channel is equal to the number of amplifier span contained in the regeneration span, the channels are regenerated one after the other throughout the link.
- Greater efficiency of power supply distribution.
- Compatible with classical opto-electronic repeater but in this case the wavelength transparency is not maintained.
- Add and Dropp capabilities also possible.

7. Disadvantages of new solution (if possible quantify).

The first step of regeneration occurs later for certain channels, so it seems necessary to take into account this phenomenon to provide an equal quality of propagation on the whole channels.
We can do it, either by reduction of the first step of regeneration span, or by an efficient dispersion slope management acting earlier than the fixed regeneration span.

8. Has the new solution been proved to be workable by experiment, by simulation, by use (if all answers are negative, when can such prove be expected)?

Proved by simulation.
At 4 x40Gbit/s, Q factor is found better than 6 on the whole channels at 10000km with an amplifier span Z_a=40 Km of DSF and a regenerating span Z_r=8xZ_a using DM transmission link – (using DCF and slope compensation). Two cases has been studied, one with an amplifier span between i and i+1 and the other with two amplifier spans. It appears, it is necessary to manage both the chromatic dispersion

and compensate the slope of the last regenerated channels at intermediate distances of their first regenerating step .

9. Date of envisaged first publication or sale or public use of a product using the new solution.

First quarter of 1999

10. Is it expected that this technical solution will be presented as proposal to a standardisation body? If so: when? To which body?

11. Is there any reason to believe that this technical solution is of particular interest to competitors? If so: which competitor(s) and for what particular reason?

All competitors acting in long-haul transmission systems either terrestrial or submarine.
(Ericsson, KDD, Lucent, Tyco, NTT, BT,.....)

12. Other useful information

Has a prior art search been made ?

If yes, : how ? (manual, online,....)
Cite and add the relevant documents :

N. Nakazawa et al, "160 Gbit/s WDM (20Gbit/s x 8 channels)soliton transmission over 10000km using in-line synchronous modulation and optical filtering", Elect. Lett., **Vol34**, n°1, 1998.

E. Desurvire et al, "Synchronous in-line regeneration of wavelength-division multiplexed solitons signals in optical fibres", Optics Letters, **Vol.21**,no14. Pp1026-1028 (1996)

O. Leclerc et al, "Assessment of 80Gbit/s (4x20Gbit/s) regenerated WDM soliton transoceanic transmission",", Elect. Lett., **Vol32**, n°12, pp1118-1119 (1996).

other information :